

Appl. No. 09/655,893

Attorney Docket No. 10541-2085

I. Amendments to the Specification

Please replace the paragraph beginning at page 13, at line 24, with the following amended paragraph:

Referring now to Figures 4(a)-(e), there is shown a method for interconnecting layers of a circuit assembly 110, which is performed in accordance with the teachings of the preferred embodiment of the invention. Circuit assembly 110 is formed by "building up" or sequentially adding various layers of certain materials to a "substrate" portion or first pre-circuit assembly 112 ~~(a first pre-circuit assembly)~~, which is substantially identical to substrate portion 52. Particularly, ~~substrate portion~~ the first pre-circuit assembly 112 includes ~~is made of~~ a ground layer ~~or core metal portion~~ 114, which is preferably manufactured and/or formed from a conventional solderable material (e.g. copper)[[. A]], a dielectric layer 116 is attached/coupled to the top surface of ~~conductive layer~~ the ground layer 114 in a conventional manner, and a conventional adhesive layer 118 is applied to and substantially covers the top surface of ~~the dielectric layer 116.~~

Please replace the paragraph beginning at page 14, at line 13, with the following amended paragraph:

In the first step of the process, as shown in Figure 4(a), through holes or vias apertures 120 are formed through ~~substrate portion~~ the first pre-circuit assembly 112 in a conventional manner (e.g., by drilling). ~~The through-holes~~ apertures 120 are formed in locations where connections between ground layer member 114 and other portions of the circuit 110 are desired to be formed. After ~~vias~~ apertures 120 are formed, a second pre-circuit assembly 124 is attached to ~~substrate portion~~ the first pre-circuit assembly 112, as shown in Figure 4(b). ~~Assembly~~ The second pre-circuit assembly 124 ~~(a second pre-circuit assembly)~~ includes a core metal portion 126, which is preferably manufactured and/or formed from a conventional aluminum material, ~~and a pair of electrically~~ a first conducting ~~conductive layers~~ layer 128, and a second conducting layer 130 which are respectively attached to the opposing surfaces (e.g., top and

BRINKS
HOFFER
GILSON
ALONE

-2-

Appl. No. 09/655,893

Attorney Docket No. 10541-2085

bottom surfaces) of the core metal portion 126 and which are preferably manufactured and/or formed from a conventional solderable material (e.g. copper). The second pre-circuit assembly 124 is registered aligned with respect to holes apertures 120 such that a portion of the first conducting layer 128 resides above each hole aperture 120 and such that the second conducting layer 130 does not reside above either hole aperture 120 (e.g., portions of the first conducting layer 128 which are desired to be connected to ground member layer 114 are aligned with through holes apertures 120). The second pre-circuit assembly 124 is then attached to adhesive layer 118 which operatively bonds the first conducting conductive layer 128 of the second pre-circuit assembly 124 to dielectric layer 116. When the second pre-circuit assembly 124 is attached to dielectric layer 116, bridge portions 132 of conductive layer 128, which are to be connected to ground core member 114, (~~e.g. portions 132~~) extend within or above apertures 120. In one non-limiting embodiment of the invention, the second pre-circuit assembly 124 and/or ~~electrically conductive member~~ the first conducting layer 128 is connected, coupled, and/or attached to adhesive material layer 118 by use of a known and conventional laminating process such as a conventional "one-step" laminating process.

Please replace the paragraph beginning at page 15, at line 21, with the following amended paragraph:

After the second pre-circuit assembly 124 is attached to the adhesive layer 118, portions of ~~aluminum member~~ the core metal portion 126 are selectively and conventionally etched away to form the two-layer circuit board illustrated in Figure 4(c). Particularly, once portions of ~~aluminum member~~ the core metal portion 126 have been etched away, protrusions, tab members or bridge portions 132 of ~~member~~ the first conducting layer 128 remain partially extended across apertures 120. In the next step of the method, a force is imparted upon bridge portions 132 in the direction of arrows 134, as illustrated in Figure 4(d). In the preferred embodiment of the invention, bridge portions 132 are "punched" downward in the direction of arrows 134 by a conventional punching process and/or tool, thereby causing bridge portions 132 to abuttingly engage

BRINKS
HOFFER
GILSON
SLONE

Appln. No. 09/655,893

Attorney Docket No. 10541-2085

the side walls of the apertures 120. Finally, as illustrated in Figure 4(e), amounts of a conductive or solder or conductive material 136 are selectively inserted into the holes apertures 120. The solder material [[132]] 136 is effective to provide a more robust and reliable connection between the ground layer 114 and the first conducting layer 128 (e.g. bridges 132). In the preferred embodiment of the invention, solder material 136 is selectively inserted or deposited into vias apertures 120 in a molten state. In alternative embodiments, solder material 136 is selectively inserted or deposited into vias apertures 120 by use of a conventional compression printing technique. In other alternate embodiments, solder material 136 may be selectively inserted into vias apertures 120 by use of a laser solder, reflow, wave solder or other conventional soldering method.

Appln. No. 09/655,893

Attorney Docket No. 10541-2085

IV. Amendment to the Title

In the prior response submitted on December 17, 2004, which responded to the Office Action dated September 17, 2004, applicant amended the title of this invention in the manner suggested by the examiner to state "Method for Forming Multilayer Circuit Board Assembly".

The above was specifically set out in Section IV "Amendments to the Title" that began on page 9 of the previous response. In light of the prior amendment, it is believed the present objection to the title was made in error and should be withdrawn.

Otherwise, please amend the title of this application to read:

Method for Forming Multilayer Circuit Board Assembly